ABSTRACT OF THE DISCLOSURE

A regulator for use with fuel cells, which is mounted in a pressure controller of a fuel cell system, has a first diaphragm flexible under the pressure of pilot air supplied as an oxidizing agent to a pilot chamber, a second diaphragm flexible under the pressure of a hydrogen-containing gas flowing through a fluid passage, and a rod connected to a valve head. The spring force of a first spring is set to a value greater than the spring force of a second spring. The regulator is of a normally closed type in which the valve head is seated on a valve seat when the pilot air is not supplied to the pilot chamber.